

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Office Action dated March 5, 2003, and the phone interviews with the Examiner on April 15 & 17, 2003. Applicants thank the Examiner for taking the phone interviews.

Claims 1-2 are currently pending in this application after entry of this amendment. Claims 1-2 are being amended, as set forth above and in the attached marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim applicants' invention. It is submitted that no new matter is being submitted through the filing of this response.

In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Prior Art Rejections

Claim 1 remains rejected under 35 U.S.C. 102(b) over Japanese Application Publication No. 06-034984 (herein after "Misono"). Claim 2 remains rejected under 35 U.S.C. 103 (a) over Misono in view of U.S. Patent No. 6,239,855 to Nakahara et.al. (hereinafter "Nakahara"). These rejections are considered collectively and respectfully traversed.

The liquid crystal display device, as now recited in claim 1, comprises a pair of substrates as disposed to spatially oppose each other with a layer of liquid crystal material interposed therebetween and a seal material used for adhesion of one of the substrates to a remaining substrate, said seal material also having a function of encapsulating the liquid crystal material. In particular, a plurality of photolithographically formed projection bodies are precisely dispersed (page 9, line 23) on one of said substrates in a predetermined shape thereof (page 8, line 24 – page 9, line 7) at a desired location thereon (page 9, line 7), and then said seal material is formed on said one of said substrates to bury (page 9, line 19) said projection bodies therewithin. In other words, each spacer of the invention is photolithographically formed (by selective etching, page 8, line 24 to page 9, line 4) to be precisely dispersed and buried within said seal material in a predetermined shape thereof at a desired location on one of the substrates. Each spacer is already fixed to the substrate before the sealant is printed to the substrate such that the spacer will not move when the substrates 1 and 2 are pressed to adhere with each other via the sealant.

Applicants respectfully contend that none of the cited prior art references teaches or suggests such projection bodies photolithographically formed projection bodies on one of the substrates in a predetermined shape thereof at a desired location thereon, and then said seal material is formed on said one of said substrates to bury said projection bodies therewithin.

Regarding Misono's spacers 9-11, they are surrounded by the wall of the seal section 5 (Fig. 1) thus placing them "in" or "within" the seal section 5. However, they are not "buried" in the seal section 5.

Regarding Misono's spacers mixed in the sealant, they are mixed in the sealant and carried to the substrate surface along with the mixture to be printed thereon. The spacers in the mixture then are squeezed and moved in the sealant while the substrates 1 and 2 are pressed towards each other to be adhered by the sealant. The positions of the spacers in the sealant are randomly decided after the squeezing step such that the spacers in sealant cannot be precisely dispersed at a desired location on the substrate in a manner similar to the spacers of the invention.

An explanatory drawing is attached along with the translation of Misono's paragraphs [0015] and [0017].

Accordingly, Applicants contend that none of the cited prior art references or their combinations teaches or discloses each and every feature of the present invention as disclosed in claim 1. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

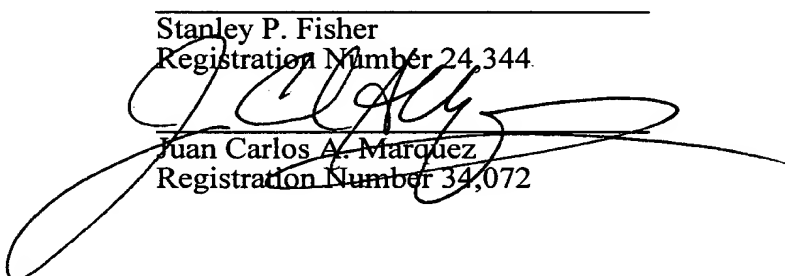
In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and

allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

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MARKED-UP COPY OF THE AMENDMENTS

1. A liquid crystal display device comprising a pair of substrates as disposed to spatially oppose each other with a layer of liquid crystal material interposed therebetween and a seal material used for adhesion of one of the substrates to a remaining substrate, said seal material also having a function of encapsulating the liquid crystal material, wherein
[more than one] a plurality of photolithographically formed projection [body is photolithographically formed within said seal material is so as to provide] bodies are precisely dispersed on one of said substrates in a predetermined shape thereof[, and said projection body is formed] at a desired location thereon, and then said seal material is formed on said one [either] of said substrates to bury said projection bodies therewithin.
2. The liquid crystal display device as recited in claim 1, wherein said [projection body comprises a] plurality [of parallel-disposed] projection bodies are parallel-disposed.

Translation

[0015] At first, the composition of the liquid crystal display element according to this embodiment is explained. The liquid crystal display element 1, as shown in Fig. 2, has a pair of glass substrates 2·2 facing each other with a seal section 5 at the periphery, a liquid crystal 6 and a spacer 7 enclosed between the substrates 2·2 and polarizing plates 8·8 which are placed outside of the substrates 2·2. Moreover, transparent-electrode films 3·3, which consist of a plurality of parallel band-like ITO films, are formed on the inner sides of the substrates 2·2, respectively in the configuration which cross each other by the upper part side and the lower part side. The orientation films 4·4 are adhered with a wrapping configuration on these transparent-electrode films 3·3. And, although not illustrated, the inlet, which is an opening prepared for pouring in the liquid crystal 6 of the liquid crystal display element 1, is closed by UV resin, and a wall mentioned later, a buffer section which is a buffer means, and island sections which are partition sections respectively formed near the inlet.

[0017] Next, a seal section 5 is formed by a sealant (sealant: Mitsui Toatsu XN-21S; spacer in sealant: KAO ES-106 (6.06 μ m) mixture 2wt%) in the periphery of the substrate 2 by printing the seal portion on the orientation film 4-4 on the surface of the substrate 2 while forming the wall 9, the buffer section 10, and the island section 11-11 near the inlet 5a of the seal section 5.